

**ENGLISH**

(Common to all branches)

Time: 3 hours

Max Marks: 70

Answer any FIVE full questions at least one from Part B

All questions carry equal marks

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**Part A**

- 1 Do you think Visvesvaraya is a true son of both Andhra and Karnataka? If so, elaborate your stand.
- 2 (a) Write about Raman's childhood and education.  
(b) Provide a note on his work on waves and light
- 3 (a) Give an account of Amartya Sen's education, with in the country and abroad.  
(b) What were the competing political demands that caused a dilemma in Sen?
- 4 (a) Describe the childhood and education of Gertrude Elion.  
(b) What achievement of Gertrude won her the Nobel Prize?  
(c) What are the memberships & awards won by Gertrude?
- 5 How did Anand become a great chess champion?
- 6 Write about Chaplin's married life.

**Part B**

- 7 (a) Write a letter to your friend about a famous cultural festival conducted in your place.  
(b) Write a letter to the Head Postmaster of your town or postal district, complaining that a parcel you sent under registered cover has not yet reached the addressee, and asking whether the parcel can be traced. Mention that the letter is accompanied by the postal receipt.

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- 8 (a) Use the following in your own words:
- (i) Turn the tables
  - (ii) Throw cold water on
  - (iii) Turn over a new leaf
- (b) Fill in the blanks with the most appropriate form of the verbs in brackets:
- (i) The sun \_\_\_\_\_ (set) by the time we \_\_\_\_\_ (leave) for home.
  - (ii) I \_\_\_\_\_ (see) the charminar earlier and \_\_\_\_\_ (go) only to keep Ram happy.
  - (iii) Abu just \_\_\_\_\_ (post) the letter that he \_\_\_\_\_ (write) two weeks ago.
- (c) Choose the alternative that best fits the blank in each sentence:
- (i) Everyone \_\_\_\_\_ him on his success (comprehended, complemented, complimented)
  - (ii) He was rich by sheer \_\_\_\_\_ of birth (incidence, accident, coincidence)
  - (iii) She bought a simple new \_\_\_\_\_ to wear to work (dress, costume, outfit)
- (d) Write as directed:
- (i) (a) Unless you work hard you cannot get the first rank  
(b) If you \_\_\_\_\_
  - (ii) (a) You bought that car. You have done a foolish thing  
(b) It was \_\_\_\_\_
  - (iii) (a) He was ill. But he worked hard  
(b) Though \_\_\_\_\_
- (e) Correct the following sentences:
- (i) It's a very easy paper.
  - (ii) Her knowledge of many languages were very remarkable.

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Code: 9ABS102

R9

B.Tech I Year (R09) Supplementary Examinations, November/December 2012

**ENGINEERING PHYSICS**

(Common to all branches)

Time: 3 hours

Max Marks: 70

Answer any FIVE questions  
All questions carry equal marks

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- 1 (a) Explain interference of light due to thin films.  
(b) What is the difference between interference and diffraction?
- 2 (a) Define packing fraction and show that FCC crystals are closely packed than BCC crystals.  
(b) Explain the crystal structures of BCC and FCC crystals.
- 3 (a) What are matter waves? Explain their properties.  
(b) Obtain the expression for the wavelength of matter waves.  
(c) Calculate the wavelength associated with an electron raised to a potential 1600 V.
- 4 (a) Write notes on forward and reverse biasing of p-n junction.  
(b) Draw and explain band diagram of p-n junction diode.
- 5 (a) Explain electronic polarization in a dielectric.  
(b) An elemental dielectric has a relative dielectric constant of 12. It also contains  $5 \times 10^{28}$  atoms/  $m^3$ . Calculate its electronic polarisability assuming Lorentz field.
- 6 (a) With neat diagrams describe the construction and working of a ruby laser.  
(b) What are the main disadvantages of ruby laser?
- 7 (a) What is modal dispersion in optical fiber and discuss it in the case of multi mode step index optical fiber?  
(b) The refractive index of the core is 1.5 and the fractional change in refractive index between the core and cladding is 1.8%. Calculate (i) The velocity of light in the core and (ii) the velocity of light in the cladding.
- 8 (a) Explain the magnetic properties exhibited by carbon nanotubes.  
(b) Explain the basic factors of carbon nanotubes on which its magnetic properties depends.

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Code: 9ABS103

R9

B.Tech I Year (R09) Supplementary Examinations, November/December 2012

**ENGINEERING CHEMISTRY**

(Common to all branches)

Time: 3 hours

Max Marks: 70

Answer any FIVE questions  
All questions carry equal marks

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- 1 Write short notes on the following:
  - (a) Colloidal and phosphate conditioning.
  - (b) Ion exchange resins.
  
- 2 Write short notes on the following:
  - (a) Electroplating.
  - (b) Impressed current cathodic protection.
  
- 3 Compare the following with suitable examples:
  - (a) Thermosetting & Thermoplastic polymers.
  - (b) Addition & Condensation polymerization.
  
- 4 Explain the working of red wood viscometer with the help of neat diagram.
  
- 5 (a) The equivalent conductance of a 0.005 N NaOH solution is 240 mho cm<sup>2</sup>. What is the specific conductance and electrical resistance if the electrodes are 1 cm apart and each have a surface area of 1 cm<sup>2</sup>.
  - (b) On what factors does the conductance of a solution depend? How would you proceed to determine the conductivity of a solution?
  
- 6 (a) What are the important reactions pertaining to phase transformation?
  - (b) What are the main reasons for heat treatment of alloys?
  
- 7 (a) What is meant by calorific value of a fuel? How does gross calorific value differ from net calorific value? Which of the two for a solid fuel is higher?
  - (b) Calculate the volume of air (volume % of oxygen in air = 21) required for the complete combustion of one liter of carbon monoxide.
  
- 8 (a) Magnesite and dolomite refractory materials should not be placed in direct contact of fireclay refractory? Explain suitable reasons.
  - (b) Why dolomite bricks rarely used as direct refractories?
  - (c) Why should thermal expansion coefficient of a refractory be least?

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B.Tech I Year (R09) Supplementary Examinations, November/December 2012

**MATHEMATICS - I**

(Common to all branches)

Time: 3 hours

Max Marks: 70

Answer any FIVE questions  
All questions carry equal marks

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1 (a) Solve:  $(x^2 - 1)\frac{dy}{dx} + 2xy = 1$ .

(b) Solve :  $x\frac{dy}{dx} + y = \log x$ .

2 (a) Solve by method of variation of parameters:  $(D^2 + a^2)y = \sec ax$ .

(b) Solve by method of variation of parameters:  $y'' + 4y = \tan 2x$ .

3 (a) Verify Rolle's theorem for  $f(x) = x(x + 3)e^{-x/2}$  in  $[-3, 0]$ .

(b) Verify Rolle's theorem for  $f(x) = e^x \sin x$  in  $[0, \pi]$ .

4 (a) Prove that the volume of revolution of  $r^2 = a^2 \cos 2\theta$  about the initial line is

$$\frac{\pi a^3}{6\sqrt{2}} [3 \log(\sqrt{2} + 1) - \sqrt{2}].$$

(b) Determine the volume of the solid generated by revolving the lemniscate  $r = a + b \cos \theta$  ( $a > b$ ) about the initial line.

5 (a) Evaluate  $\int_0^\infty \int_0^{\pi/2} e^{-r^2} r \, d\theta \, dr$ .

(b) Change the order of integration in  $\int_0^1 \int_x^{\sqrt{2-x^2}} \frac{x \, dy \, dx}{\sqrt{x^2+y^2}}$  and evaluate.

Contd. in Page 2

- 6 (a) Find the Laplace transform of  $f(t) = \begin{cases} t, & 0 < t < 3 \\ 3, & t > 3 \end{cases}$
- (b) Find  $L^{-1} \left\{ \frac{se^{-s/2} + \pi e^{-s}}{s^2 + \pi^2} \right\}$ .
- 7 (a) Using Laplace transform, evaluate  $\int_0^{\infty} \frac{(\cos 6t - \cos 4t)}{t} dt$ .
- (b) Solve the D.E.  $\frac{d^2x}{dt^2} + 9x = \cos 2t$  Using L.T. given that  $x(0) = 1$ ,  $x\left(\frac{\pi}{2}\right) = -1$ .
- 8 (a) Find the values of constants  $\lambda$  and  $\mu$  so that the surfaces  $\lambda x^2 - \mu yz = (\lambda + 2)x$  and  $4x^2y + z^3 = 4$  may intersect orthogonally at the point  $(1, -1, 2)$ .
- (b) Evaluate  $\iint_S \vec{F} \cdot \vec{n} dS$ , where  $\vec{F} = (18z)\mathbf{i} - 12\mathbf{j} + 3y\mathbf{k}$  and  $S$  is the surface of the plane  $2x + 3y + 6z = 12$  in the first octant.

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B.Tech I Year (R09) Supplementary Examinations, November/December 2012

**MATHEMATICAL METHODS**

(Common to CSE, ECE, EEE, EIE, ECM, E.Con.E, IT and CSS)

Time: 3 hours

Max Marks: 70

Answer any FIVE questions  
All questions carry equal marks

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- 1 (a) Reduce the matrix to Echelon form and find its rank

$$\begin{pmatrix} -1 & -3 & 3 & -1 \\ 1 & 1 & -1 & 0 \\ 2 & -5 & 2 & -3 \\ -1 & 1 & 0 & 1 \end{pmatrix}$$

- (b) Test for consistency and if consistent solve the system,
- $5x + 3y + 7t = 4$
- ;
- $3x + 26y + 2t = 9$
- ;
- $7x + 2y + 10t = 5$
- .

- 2 (a) Prove that the Eigen values of a Hermitian matrix are all real.

- (b) Reduce the following quadratic form to canonical form by Lagrange's reduction:
- 
- $x^2 - 14y^2 + 2z^2 + 4xy + 16yz + 2zx$
- and hence find the index, signature and nature of the quadratic form.

- 3 (a) Find a real root of the equation
- $x = e^{-x}$
- , using the Newton-Raphson method.

- (b) Consider the following data for
- $g(x) = (\sin x) / x^2$

x	0.1	0.2	0.3	0.4	0.5
g(x)	9.9833	4.9696	3.2836	2.4339	1.9177

Calculate  $g(0.25)$  accurately using Newton's forward method of interpolation

- 4 (a) Fit a second degree parabola to the data

x:	0	1	2	3	4
y:	1.0	1.8	1.3	2.5	6.3

- (b) Evaluate
- $\int_0^{\pi/2} \sin x \, dx$
- by Simpson's
- $\frac{1}{3}$
- rule and compare with the exact value.

Contd. in Page 2

- 5 (a) Using Euler's method, solve for  $y$  at  $x = 0.1$  from  $\frac{dy}{dx} = x + y + xy$ ,  $y(0) = 1$  taking step size  $h = 0.025$ .
- (b) Using the Taylor's series method, solve  $\frac{dy}{dx} = xy + y^2$ ,  $y(0) = 1$  at  $x = 0.1$ .
- 6 (a) Express  $f(x) = x$  as a Fourier series in the interval  $-\pi < x < \pi$ .
- (b) Find the Fourier transform of  $f(x) = \begin{cases} 1 - x^2, & |x| \leq 1 \\ 0, & |x| > 1 \end{cases}$ . Hence evaluate  $\int_0^\infty \frac{x \cos x - \sin x}{x^3} \cos \frac{x}{2} dx$ .
- 7 Solve completely the equation  $\frac{\partial^2 y}{\partial t^2} = c^2 \frac{\partial^2 y}{\partial x^2}$ , representing the vibrations of a string of length  $l$ , fixed at both ends, given that  $y(0, t) = 0$ ,  $y(l, t) = 0$ ,  $y(x, 0) = f(x)$  and  $\frac{\partial y(x, 0)}{\partial t} = g(x)$ ,  $0 < x < l$ .
- 8 (a) Find Z-transform of  $\cosh n\theta$  and  $\sinh n\theta$ .
- (b) Find  $Z^{-1} \left\{ \frac{z^3 - 20z}{(z-2)^3(z-4)} \right\}$ .

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B.Tech I Year (R09) Supplementary Examinations, November/December 2012

**ENGINEERING MECHANICS**  
(Common to AE, BT, CE and ME)

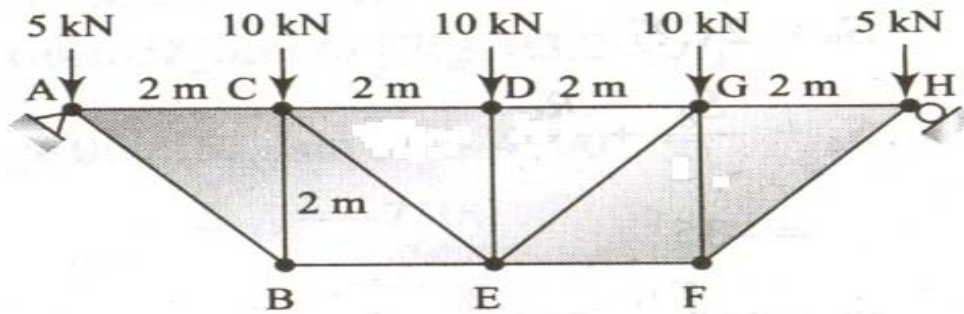
Time: 3 hours

Max Marks: 70

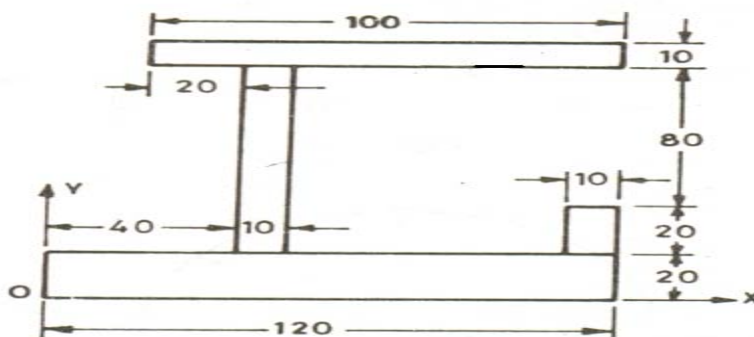
Answer any FIVE questions  
All questions carry equal marks

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- Define the following terms:
  - Rigid body.
  - Principle of transmissibility.
  - Triangle law of forces.
  - Deformable body.
- Determine the forces in the members AC, DE and GH of the frame loaded and supported as shown in the below figure.

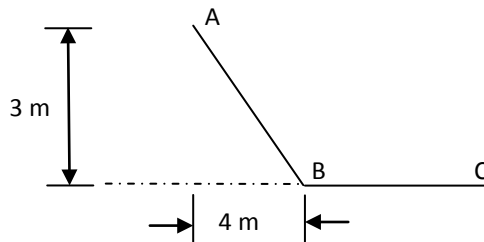


- The following particulars refer to a screw jack:
  - Diameter of screw rod = 62.5 mm.
  - Length of the handle = 250 mm.
  - Pitch of the square thread = 12.5 mm.
  - Coefficient of friction = 0.05.
  - Find the effort required to lift up a load of 5000 N.
  - Find the effort required to lift down a load of 5000 N.
- Determine the centroid of the built up section in the below figure. Express the coordinates of centroid with respect to x and y axes shown. All the dimensions are shown in mm.



Contd. in Page 2

- 5 (a) State and prove parallel axis theorem.  
 (b) Derive the expression to determine moment of inertia of a semicircular area about its diametral axis.
- 6 (a) A balloon is ascending with a velocity of 20 m/sec above a lake a stone is dropped to fall from the balloon and the sound of the splash is heard 6 seconds later. Find the height of the balloon when the stone was dropped. Velocity of sound is 340 m/sec.  
 (b) The acceleration of a particle in rectilinear motion is defined by the relation  $a = 25 - 4S^2$ , where 'a' is expressed in  $\text{m/sec}^2$  and 'S' is position coordinate in meters. The particle starts with no initial velocity at the position  $S = 0$ . Determine  
 (i) The velocity when  $S = 3$  m.  
 (ii) The position where the velocity is again zero.  
 (iii) The position where the velocity is maximum.
- 7 (a) A homogeneous sphere of radius of  $a = 100$  mm and weight  $w = 10$  N can rotate freely about a diameter. If it starts from rest and gains, with constant acceleration, angular speed  $N = 180$  rpm, in 12 revolutions, find the action moment.  
 (b) A block starts from rest from 'A'. If the coefficient of the friction between all surfaces of contact is 0.3. Find the distance at which the block stop on the horizontal plane. Assume the magnitude of velocity at the end of slope is same as that at the beginning of the horizontal plane.



- 8 The central deflection of a simply supported beam with a central point load is given by  $\delta = \frac{WL^3}{48EI}$ . Where  $L = 5$  m,  $E = 2 \times 10^5$  N/mm<sup>2</sup>,  $I = 1.73 \times 10^{-5}$  m<sup>4</sup>. The beam is of uniform cross section with a static load 'W'. Determine  
 (a) Equivalent spring constant of the beam.  
 (b) The frequency of vibration of a 60 kg block attached to the center of the beam. Neglect the mass of the beam and assume that the load remains in contact with the beam.

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**ENGINEERING DRAWING**

(Common to ECE, E.Con.E and BT)

Time: 3 hours

Max Marks: 70

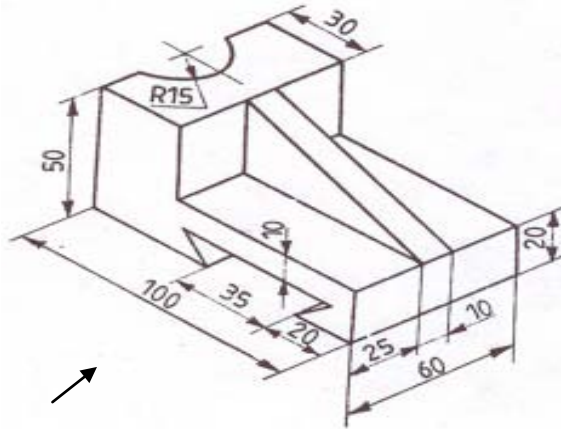
Answer any FIVE questions  
All questions carry equal marks

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- 1 A circle of 60 mm diameter rolls on a horizontal line for a half revolution and then on a vertical line for another half revolution. Draw the curve traced out by a point  $p$  on the circumference of the circle.
- 2 (a) A line MN 50 mm long is parallel to VP and inclined at  $45^\circ$  to HP. The end M is 20 mm above HP and 15 mm in front of VP. Draw the projections of the line and find its traces.  
(b) Draw the projections of a straight line AB of 100 mm long when one of its ends is touching the VP and the other end touching HP. The angles of inclination with HP and VP are  $40^\circ$  and  $50^\circ$  respectively.
- 3 (a) A rectangular lamina of sides 40 mm X 30 mm is perpendicular to both HP and VP. Draw its projections.  
(b) Draw the projections of a pentagonal plane figure of side 28 mm resting with one of its edges on HP. Such that the plane figure is inclined at  $30^\circ$  to HP perpendicular to VP.
- 4 (a) A cone of diameter 60 mm is resting on the HP on one of its generators. Draw its projections if its axis is parallel to VP.  
(b) A hexagonal prism of side of base 25 mm and length of axis 70 mm is resting on the HP on one of its rectangular faces. Draw its projections when its axis is inclined to the VP at  $45^\circ$ .
- 5 A pipe of 45 mm diameter is welded to the vertical side of a rectangular steel tank. The axis of the pipe 100 mm long is inclined at an angle of  $60^\circ$  to the side to which it is welded. The other end of the pipe makes an angle of  $30^\circ$  to its own axis. Draw the development of the pipe. Neglect the pipe thickness.

Contd. in Page 2

- 6 Draw the elevation, plan and right views of the bracket shown in the picture below (dimensions in mm)



- 7 A cylinder of 60 mm diameter and axis 80 mm long is standing on its base on HP. A horizontal hexagonal hole of 25 mm side is cut through the cylinder. Axis of the hole is parallel to VP. The axes of both cylinder and hole intersect at right angles and bisect each other. A side face of the hole is inclined at an angle of  $30^\circ$  to the HP. Draw the projections and show the curves of intersection.
- 8 A solid is in the form of a square prism of side of base 40 mm up a height of 50 mm and thereafter tapers into frustum of a square pyramid whose top surface of 25 mm side. The total height of the solid is 70 mm. Draw the solid in perspective, given that one side of the base of the solid resting on the ground is inclined at  $25^\circ$  to the PP and the corner containing that side is 40 mm to the right of the eye and is touching the PP. The eye is 100 mm from PP and 90 mm above the ground.

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**ENGINEERING DRAWING**  
(Common to CSE, CSSE and CE)

Time: 3 hours

Max Marks: 70

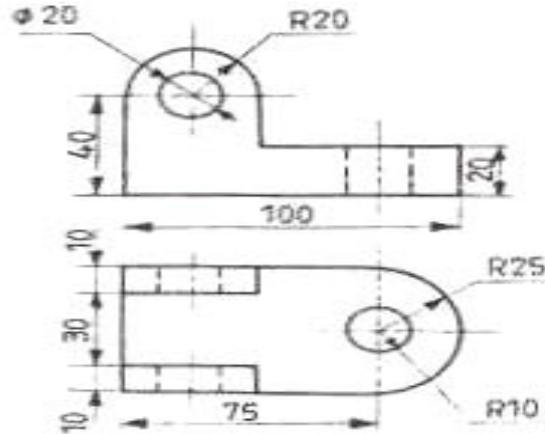
Answer any FIVE questions  
All questions carry equal marks

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- 1 (a) Draw an epi-cycloid if a circle of 40 mm diameter rolls outside another circle of 120 mm diameter for one revolution.  
(b) A circle of 40 diameter rolls on the concave side of another circle of 40 radius. Draw the path traced by a point on the generating circle for one complete revolution.
- 2 (a) The top view of a 75 mm long line measures 55 mm. The line is in the V.P., its one end being 25 mm above H.P. Draw its projections.  
(b) The front view of a line, inclined at  $30^{\circ}$  to the V.P. is 65 mm long. Draw the projection of the line, when it is parallel to and 40 mm above the V.P., its one end being 30 mm in front of the V.P.
- 3 (a) A thin circular metal plate of 48 mm diameter, having its plane vertical and inclined at  $40^{\circ}$  to VP. Its center is 33 mm above HP and 25 mm in front of VP. Draw its projections.  
(b) A hexagonal sheet metal of 25 mm side rests on the HP such that its surface is inclined at an angle of  $45^{\circ}$  to the VP. Draw its projections of the plane.
- 4 (a) Draw the top and front views of a cube of 40 mm side resting its one of its square faces on H.P. such that one of its vertical faces is parallel to and 10 mm in front of V.P.  
(b) Draw the projections of square prism of side of base 30 mm and height 50 mm resting with its base on H.P. such that one of its rectangular faces is perpendicular to V.P. the nearest edge parallel to V.P. is 5 mm in front it.
- 5 A hexagonal prism, side of the base 25 mm long and axis 65 mm long is resting on an edge of the base on the H.P. its axis being inclined at  $60^{\circ}$  to the H.P. and parallel to the V.P. A section plane, inclined at  $45^{\circ}$  to the V.P. and normal to the H.P. cuts the prism and passes through a point on the axis at a distance of 20 mm from the top end of the axis. Draw its sectional front view and true shape of the section.

Contd. in Page 2

- 6 Two views of a casting are shown below. Draw the isometric view of the casting (dimensions are in mm)



- 7 A cylindrical boiler is 2 m in diameter and has a cylindrical dome 0.8 m diameter and 0.6 m high. The axis of the dome intersects the axis of the boiler. Draw three views of the arrangement. Also develop the surface of the dome. Take a scale of 1 cm = 0.2 m.
- 8 A hexagonal plane with a 40 mm side has a centrally cut square hole with a 30 mm side such that a side of the hole and a side of the hexagon are parallel PP. It lies on the GP with a nearer edge of the hexagon 10 mm behind the PP. The station point is 50 mm in front of PP, 70 mm above GP and lies in a CP which is at a distance of 40 mm towards right of the centre of the object. Draw its perspective view.

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B.Tech I Year (R09) Supplementary Examinations, November/December 2012

**ENGINEERING DRAWING**  
(Common to EEE, ECM and AE)

Time: 3 hours

Max Marks: 70

Answer any FIVE questions  
All questions carry equal marks

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- 1 (a) The major and minor axis of an ellipse is 120 & 80 mm. Draw an ellipse by arcs of circles method.  
(b) The asymptotes of a hyperbola are inclined at  $70^\circ$  to each other. Construct the curve when a point  $p$  on it is at a distance of 20 and 30 from the two asymptotes.
- 2 (a) The top view of a 75 mm long line CD measures 50 mm. C is 50 mm in front of the V.P. and 15 mm below the H.P. D is 15 mm in front of the V.P. and is above the H.P. Draw the front view of CD and find inclinations with the H.P. and the V.P. Show also its traces.  
(b) A line CD 80 mm long has its end C 55 mm in front of VP and 15 mm above HP. The line is inclined at  $50^\circ$  to HP and  $40^\circ$  to VP. Draw the projections of the line.
- 3 (a) A regular pentagon of 25 mm side has one side on the ground. Its plane is inclined to H.P at  $45^\circ$  and perpendicular to V.P. Draw its projections  
(b) Draw the projections of circle diameter of 5 cm having its plane vertical and inclined at  $30^\circ$  to the V.P Its center is 3 cm above H.P and 2 cm in front of V.P.
- 4 (a) Draw the projections of a regular hexagonal prism, side of base 25 mm and axis 50 mm long resting with its base on H.P. such that one of its edges of the base is inclined at  $20^\circ$  to V.P.  
(b) A hexagonal prism ,side of base 25mm and axis 50mm long rests with one of its base makes an angle of  $60^\circ$  to H.P .and its axis is parallel to V.P. Draw its projections.
- 5 A square prism of 40 mm side and 60 mm height rests on its base on HP such that the vertical faces are equally inclined to VP. A horizontal hole of 40 mm diameter is drilled through the geometrical center of the prism with the axis perpendicular to VP. Develop the lateral surface of the prism.

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**ENGINEERING DRAWING**  
(Common to EIE, IT and ME)

Time: 3 hours

Max Marks: 70

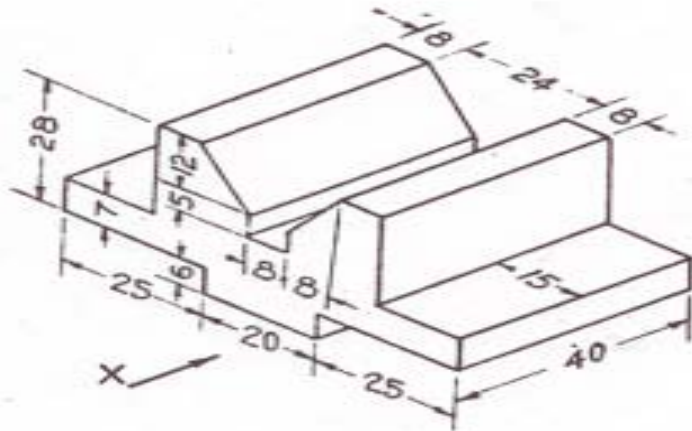
Answer any FIVE questions  
All questions carry equal marks

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- 1 Two fixed points A & B are 100 mm apart. Trace the complete path of a point *P* moving (in the same plane as that of A & B) in such a way that, the sum of its distances from A & B is always the same and equal to 125 mm. Name the curve. Draw another curve parallel to and 25 mm away from this curve.
- 2 (a) Draw the projections of a line AB, 90 mm long, its mid-point M being 50 mm above the H.P. and 40 mm in front of the V.P. The end A is 20 mm above the H.P. and 10 mm in front of the V.P.  
(b) A line AB of 70 mm long has its end A, 20 mm above H.P. and 15 mm in front of V.P. The line is inclined at  $30^\circ$  to H.P. and  $60^\circ$  to V.P. Draw its projections.
- 3 (a) A regular hexagonal plane of 30 mm side has a corner at 20 mm from V.P. and 50 mm from H.P. its surface is inclined  $45^\circ$  to V.P. and perpendicular to H.P. Draw the projections of the plane.  
(b) A pentagon of 30 mm side has one of its corners on HP and its plane is inclined at  $65^\circ$  to VP and perpendicular to HP. Draw its projections.
- 4 (a) Draw the projections of a pentagonal pyramid, base 30 mm edge and axis 50 mm long, having its base on the H.P. and an edge of the base parallel to the V.P.  
(b) Draw the projections of a cone of base 50 mm diameter, axis 60 mm long, resting on ground on its base.
- 5 (a) A cube 35 mm long edges is resting on the HP on one of its faces with a vertical face inclined at  $30^\circ$  to the VP. It is cut by a section plane parallel to the VP and 9 mm away from the axis and further away from the VP. Draw its sectional front view and the top view.  
(b) A pentagonal pyramid, base 30 mm side and axis 65 mm long, has its base horizontal and an edge of the base parallel to the VP. A horizontal section plane cuts it at a distance of 25 mm above the base. Draw its front view and sectional top view.

Contd. in Page 2

- 6 Draw the front view, top view and right side view of the object shown below (Dimensions in mm).



- 7 A hexagonal prism of side of base 30 mm is resting on one of its bases on HP with a face parallel to VP. The prism contains a square hole of 20 mm side. The axis of the hole is parallel to VP and inclined at an angle of  $30^\circ$  to the HP intersecting the axis of the prism. The faces of the hole are equally inclined to VP. Draw the lines of intersection.
- 8 Draw a perspective view of a square plane with a 60 mm side resting on the GP with one of its corners touching PP and a side right to the corner inclined at  $30^\circ$  to it. The station point is 50 mm in front of PP, 60 mm above GP and lies in a CP which is 40 mm towards right of the corner touching the PP.

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Code: 9A05101

**R9**

B.Tech I Year (R09) Supplementary Examinations, November/December 2012

**PROGRAMMING IN C AND DATA STRUCTURES**

(Common to all branches)

Time: 3 hours

Max Marks: 70

Answer any FIVE questions  
All questions carry equal marks

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- 1 (a) Mention the steps involved in software development method.  
(b) Briefly explain the need for software maintenance.  
(c) What is an algorithm? Explain with suitable example.
- 2 What is an operator? Explain different operators in C.
- 3 (a) What are the advantages and disadvantages of recursion?  
(b) Write a program to find the sum of all floating point elements in an array.
- 4 (a) What is a string variable? How to declare a string variable?  
(b) Write a program to count the number of digits, alphabets, white spaces and other characters in a sentence.
- 5 (a) Give the various advantages of bit fields.  
(b) Use bit fields to represent the details of a person like his sex, marital status, number of children, age. Write a program to access these contents.
- 6 (a) Discuss the concept of searching errors in reading of files.  
(b) Discuss random file handling functions of C language.
- 7 Explain circular queue in detail. Implement the same using C program.
- 8 (a) Discuss the algorithm of quick sort with an example. Give its time complexity.  
(b) What is called as external sorting technique? Discuss merge sort algorithmic technique with an example.

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